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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,318	06/15/2005	Andreas Johannes Gerrits	NL 021345	2734

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EXAMINER	
GODBOLD, DOUGLAS	
ART UNIT	PAPER NUMBER
2626	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/539,318	GERRITS ET AL.	
	Examiner	Art Unit	
	DOUGLAS C. GODBOLD	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to correspondence filed July 1, 2009 in reference to application 10/539,318. Claims 1-10 are pending and have been examined.

Response to Amendment

2. The amendment filed July 1, 2009 has been accepted and considered in this office action. Claims 1 and 10 have been amended.

Response to Arguments

3. Applicant's arguments filed July 1, 2009 have been fully considered but they are not persuasive.

4. Regarding applicants arguments, see remarks page 6, that claims 8-10 is directed towards statutory subject manner, points to paragraph 0028 of the publish specification. Here, the specification states that hardware *may* implement the elements, but this is not a positively recited requirement. Paragraph 0028 also states that the elements may be programmed into a computer. Because of this possibility, the rejection under 35. U.S.C. 101 must be made. It is suggested that the the applicant explicitly claim a piece of hardware to perform one of the steps in order to make the claims statutory.

5. Regarding applicant's arguments, see remarks pages 7 and 8, that Tsutsui2 does not teach or suggest "combining amplitudes of frequency components within said local frequency band from which at least one of the candidate sinusoids within said local frequency band is excluded," the examiner respectfully disagrees. As pointed out by the applicant the variable "X" excludes the candidate sinusoid, and "Y" includes it. It seems to be the applicant's contention that because a ratio of X and Y are taken, it cannot be fairly said that Tsutsui2 excludes the candidate sinusoids. However all the claim requires is that the amplitudes are combined excluding a candidate sinusoid, it does not specifically state or imply that later the combination cannot be made including the candidate sinusoid. In short, the combination to create "X" is enough to meet the limitations of the claim. "Y" is only used to compare to "X" and the language of the claim does not prohibit this.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 8-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 8-10 describe audio encoders or audio systems comprising various means for completing tasks. However as indicated by the specification page 10 lines 15-24 the systems and encoders may be implemented in software. Therefore the claims can be reasonably construed as software only

embodiments, which is considered non-statutory under 35 U.S.C 101. Therefore claims 8-10 are rejected as being non-statutory.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-5, 8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsutsui et al (US Patent 5,717,821) from hereon referred to as Tsutsui2 to avoid confusion with the Tsutsui reference used in the prior rejection.

10. Consider claims 1 and 8: Tsutsui2 discloses a method and audio encoder for encoding an audio signal by representing at least part of said audio signal by a plurality of sinusoids (see Abstract, frequency components are sinusoids by definition), the method comprising the steps of:

performing an analysis on a first segment of said audio signal (waveform is transformed to frequency components; column 10 lines 37-40);

selecting candidate sinusoids based on said analysis (N spectrum signals inputted into tone separating component; column 12 line 24. A component is considered when its amplitude is greater to that of surrounding amplitudes when locally view; column 12 line 30);

defining for at least one of the candidate sinusoids a local frequency band around a frequency of said at least one candidate sinusoid (neighboring spectrum components; column 12 line 36);

combining amplitudes of frequency components within said local frequency band from which at least one of the candidate sinusoids within the local frequency band is excluded (Figures 4, Step 6, energy value of neighboring spectrum is summed; column 13 lines 3-6.); and

selecting said candidate sinusoid as a selected sinusoid in dependence on the combination of amplitudes (Steps S8 and S9, where ratio is considered and tonality is registered; column 13 lines 3-35.).

11. Consider claim 2: Tsutsui2 discloses a bandwidth of said local frequency band around the frequency of said at least one candidate sinusoid is defined in dependence on the frequency of said at least one candidate sinusoid (Figure 5 shows the bands selected around frequency components B1-B5 that grow wider as they get higher, also column 2 lines 10-28).

12. Consider claim 3: Tsutsui2 discloses dependence on the frequency of said candidate sinusoid is based on a human's perception of audio (see column 2 lines 10-28, where Tsutsui discusses taking the characteristics of human hearing into account).

13. Consider claim 4: Tsutsui2 discloses candidate sinusoid is selected as a selected sinusoid when its amplitude of said candidate sinusoid is significant with regard to said combination of amplitudes (Figures 4, Step 6, energy value of neighboring spectrum is summed; column 13 lines 3-6.), said significance being evaluated by thresholding a difference between the amplitude of said candidate sinusoid and a weighted mean amplitude of frequency components within the local frequency band of said candidate sinusoid from which at least one of the candidate sinusoids within said local frequency band is excluded (Steps S8 and S9, where ratio is considered in regards to Threshold R and tonality is registered; column 13 lines 3-35, T).

14. Consider claim 5: Tsutsui2 discloses candidate sinusoid is selected as a selected sinusoid when an amplitude of said candidate sinusoid is significant with regard to said combination of amplitudes, (Figures 4, Step 6, energy value of neighboring spectrum is summed; column 13 lines 3-6) said significance being evaluated by thresholding a ratio (X/Y) of:

a difference between the amplitudes of said candidate sinusoid and a weighted mean amplitude of frequency components within the local frequency band of said candidate sinusoid's local frequency band from which at least one of the candidate sinusoids within said local frequency band is excluded; (Figures 4, Step 6, energy value of neighboring spectrum is summed X; column 13 lines 3-6) and

a weighted deviation of the amplitudes of frequency components within said local frequency band from which at least one of the candidate sinusoids within said local

frequency band is excluded (absolute value of spectrum of band Y; column 13 lines 5-9).

15. Consider claim 10: Tsutsui2 disclose means for obtaining an audio signal (see Figure 1, 600), an audio encoder for encoding said audio signal to obtain an encoded audio signal (see Figure 1, 601-506), and

means for performing an analysis on a first segment of said audio signal (waveform is transformed to frequency components; column 10 lines 37-40);

means for selecting candidate sinusoids based on said analysis (N spectrum signals inputted into tone separating component; column 12 line 24. A component is considered when its amplitude is greater to that of surrounding amplitudes when locally view; column 12 line 30);

means for defining for at least one of the candidate sinusoids a local frequency band around a frequency of said at least one candidate sinusoid (neighboring spectrum components; column 12 line 36);

means for combining amplitudes of frequency components within said local frequency band from which at least one of the candidate sinusoids within the local frequency band is excluded (Figures 4, Step 6, energy value of neighboring spectrum is summed; column 13 lines 3-6.); and

means for selecting said candidate sinusoid as a selected sinusoid in dependence on the combination of amplitudes (Steps S8 and S9, where ratio is considered and tonality is registered; column 13 lines 3-35.)

a formatting unit for formatting the encoded audio signal into a format suitable for storage and/or transmission (606-609).

Claim Rejections - 35 USC § 103

16. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

17. Claims 6, 7, and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsui2 in view of McAulay et al (US Patent 5,054,072).

18. Consider claims 6 and 9: Tsutsui2 does not specifically disclose a further selection out of the selected sinusoids which comprises the steps of:

determining for at least one of the selected sinusoids a phase consistency defined by an extent to which a phase of said selected sinusoid at a certain moment in time can be predicted from a phase of said selected sinusoid determined at another moment in time; and

further selecting said selected sinusoid as a further selected sinusoid when its phase consistency is above a predetermined threshold

In the same field of Audio Coding, McAulay teaches a further selection out of the selected sinusoids which comprises the steps of:

determining for at least one of the selected sinusoids a phase consistency defined by an extent to which a phase of said selected sinusoid at a certain moment in

time can be predicted from a phase of said selected sinusoid determined at another moment in time (see Col. 2, lines 26 - 40 where McAulay discusses predicting phases across frames and Col. 5, lines 10-20, where McAulay discusses the phase calculation); and

further selecting said selected sinusoid as a further selected sinusoid when its phase consistency is above a predetermined threshold (see Col. 7, lines 19-27, where McAulay discusses phase modeling and a required minimum value, therefore a threshold).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to consider phase as taught by McAulay in the system of Tsutsui2 in order to provide a more accurate and realistic sounding coded signal.

19. Consider claim 7: Tsutsui2 does not specifically disclose determining phase consistency comprises the steps of:

segmenting a third segment of said audio signal into at least a first and a second part;

determining the actual phases of said selected sinusoid in at least the first and the second part;

using the actual phase in the first part to serve as the input for predicting the actual phase in the second part; and

determining said selected sinusoid's phase consistency based on a prediction error between the actual phase and the predicted phase in the second part.

In the same field of audio coding McAulay disclose determining phase consistency comprises the steps of:

segmenting a third segment of said audio signal into at least a first and a second part (see Col. 8, lines 4-10, where McAulay discusses pitch periods);

determining the actual phases of said selected sinusoid in at least the first and the second part (see Col. 8, lines 8-15, where McAulay discusses evaluating the phase after a determination);

using the actual phase in the first part to serve as the input for predicting the actual phase in the second part (see Col. 8, lines 30-35, where McAulay discusses determining residual phases); and

determining said selected sinusoid's phase consistency based on a prediction error between the actual phase and the predicted phase in the second part (see Col. 7, lines 30-40, where McAulay discusses selection based on minimizing the error).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to consider phase as taught by McAulay in the system of Tsutsui2 in order to provide a more accurate and realistic sounding coded signal.

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS C. GODBOLD whose telephone number is (571)270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DCG
/Richemond Dorvil/
Supervisory Patent Examiner, Art Unit 2626